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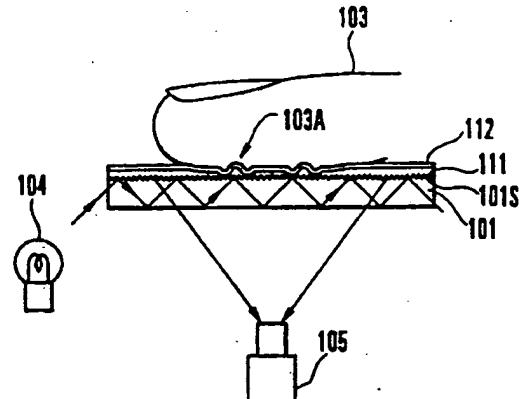
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### (54) Fingerprint detecting device

(57) A fingerprint detecting device includes a flat transparent body, a light source, a thin surface film layer, a fluid layer, and an image detection unit. The transparent body on which a skin surface of a finger is pressed has a surface constituted by a scattering surface with a fine three-dimensional unevenness. The light source irradiates incident light from an inside of the transparent body on the skin surface pressed against the surface of the transparent body. The surface film layer is formed on the surface of the transparent body via a small gap, on which a three-dimensional pattern of the skin surface is transferred by pressing the finger. The fluid layer is formed by sealing one of a gas and a liquid in the gap between the surface of the transparent body and the surface film layer, and is pressed by the surface film layer on which the three-dimensional pattern of the skin surface is transferred. The image detection unit detects an image fingerprint pattern on the basis of the light from the light source, the reflection of which is changed at the surface of the transparent body, when the surface film layer comes into contact with the surface of the transparent body in accordance with the three-dimensional pattern of the skin surface.



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## EUROPEAN SEARCH REPORT

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EP 98 10 5486

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	EP 0 194 783 A (FUJITSU LTD) 17 September 1986 * column 10; figures 16,17 * ----	1-13	G06K9/00
A	US 5 448 649 A (CHEN WANG S ET AL) 5 September 1995 * abstract; figures 1-9 * ----	1-13	
A	US 4 322 163 A (SCHILLER MICHAEL) 30 March 1982 * abstract; figure 6 * ----	1-13	
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	24 June 1999	Granger, B	
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category; A : technological background O : non-written disclosure P : intermediate document			

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 98 10 5486

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24-06-1999

Patent document cited in search report		Publication- date	Patent family member(s)	Publication date
EP 0194783	A	17-09-1986	JP 1781416 C JP 4071229 B JP 62187817 A JP 1998913 C JP 7011824 B JP 62187818 A JP 1818397 C JP 5025145 B JP 62187819 A JP 1049997 B JP 1565445 C JP 61201380 A JP 1677135 C JP 3038621 B JP 61221883 A JP 1652528 C JP 3012752 B JP 62042285 A JP 62074174 A JP 1628305 C JP 2052309 B JP 62074175 A JP 1628306 C JP 2052310 B JP 62074177 A JP 62140187 A CA 1246179 A DE 3688339 A FI 860862 A,B, US 4728186 A	13-08-1993 13-11-1992 17-08-1987 08-12-1995 08-02-1995 17-08-1987 27-01-1994 12-04-1993 17-08-1987 26-10-1989 25-06-1990 06-09-1986 26-06-1992 11-06-1991 02-10-1986 30-03-1992 20-02-1991 24-02-1987 04-04-1987 20-12-1991 13-11-1990 04-04-1987 20-12-1991 13-11-1990 04-04-1987 23-06-1987 06-12-1988 03-06-1993 04-09-1986 01-03-1988
US 5448649	A	05-09-1995	NONE	
US 4322163	A	30-03-1982	AT 32554 T CA 1166445 A DE 3176657 A EP 0052348 A EP 0052349 A JP 57111778 A JP 57111779 A DE 2846190 A FR 2407530 A GB 2007899 A,B JP 54078154 A DE 2846189 A FR 2407533 A	15-03-1988 01-05-1984 31-03-1988 26-05-1982 26-05-1982 12-07-1982 12-07-1982 03-05-1979 25-05-1979 23-05-1979 22-06-1979 26-04-1979 25-05-1979

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 98 10 5486

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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24-06-1999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4322163 A		GB 2007415 A,B JP 54077499 A	16-05-1979 20-06-1979